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Investigation of the Effect of Religious Beliefs on the Formation of Persian Garden Architecture (Case Study: Shahzade mahan Garden of Kerman)

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Abstract: Nature is the manifestation of existence. Persian Garden with its brilliant history as one of the best landscaping patterns has been a product of constructive interaction of Iranian Man with the nature. Garden and gardening contains many meanings in Iranian culture and Iranian world has always been full of manifestations of garden and nature. In the meantime, Iranian landscape architecture reflects the mystical and religious concept of nature and global discipline and introduces the concept of spaces. The objective of this study is to demonstrate that gardens have reflected more of mankind's religious ideas and beliefs than manifestation of climate and historical eras. The research method is analytical-descriptive with the selection of a sample case of examples of Persian Gardens and the data collection method is of librarian and field type by observation of Iranian landscapes of Islamic period. Having analyzed the architectural body of Iranian landscape, it finally turned out that due to richness of religious teaching and its deep effect on the environmental quality enhancement, the necessity of research evaluation of this article is proved, through which factors affecting qualitative enhancement of the environment in programs and projects of the present era are determined.

Keywords: Persian Garden, Structural System, Iranian Landscape, Heaven, Islam.

INTRODUCTION

The garden has been regarded as one of the most important architectural spaces in Iran's history since ancient times. Historically speaking, design and execution of the artificial and natural architectural space has always been considered by kings and people of this land. Diversity in the reconstruction plans by

archaeologists such as what “Masoudi” said in comparison of reconstructed projects of Egyptian, Babylonian, Assyrian and Achaemenid gardens (Noghrekar, 2009:107-109-116-170) and also maintenance of some elements in special eras specially the three pillars of water, plant and building as three constant elements of all gardens which appear in each culture by its own way have indicate the emergence of religious ideas in the design of Persian Gardens.

There are many different interpretations on how Persian Garden has been designed and formed. Investigations show that the reasons for garden formation lie in a range of body requirements, structural and physical systems and so on to the effect of mythological, religious and ritual thoughts. Efforts have been made to examine these views more extensively in the paper. In the meantime, what is considered more than others and ahead of other factors is theoretical foundations and religious ideas of Islamic period which has always been effective on the formation of Persian Gardens as an objective and earthly paradise.

Islam and the collection of its resources have had a great impact on the architecture of Iran. Adaptive and analytical examination of the architecture of temples, homes, towns and so on in the periods before and after Islam clearly shows the effect of Islam and dramatic impacts of the school on architects and designers’ thought (Noghrekar, 2008: 397-509). However, no study has ever been conducted to illustrate the effects religious beliefs of Islamic era on the design of Persian Gardens.

The present text is an attempt to explain the effect of religious thoughts on the formation of Persian Gardens and to investigate the design developments of Persian Garden of Eden. For this purpose, first the structural and form systems of Iranian landscape architecture is investigated and then religious ideas and beliefs prevailing over formation of Iranian Fin Garden of Kashan are analyzed. The first hypothesis of the study is that the main and basic system dominating the formation of Persian Garden has been influenced by theoretical foundations and religious thoughts of Islamic period and the architecture of Iranian paradise reflects religious ideas on the ideal paradise and beautiful and pleasurable body imagination.

STRUCTURAL AND PHYSICAL SYSTEMS OF IRANIAN LANDSCAPE ARCHITECTURE

Establishment system

The establishment system deals with dimensions of land slope and terrain, directions, climatic condition, water, air, soil type, wind and breeze direction, the aesthetics, dominant points and axes over the bed and internal landscape and perspective on the one hand and on the other hand bed position with respect to the city, region and area, access points, points of entry, surrounding dominant axes and points and also external landscape and perspective (Bell, 2002: 91).

System of access and approach to the space

The hierarchy of entrance and approach to the space is of special importance (Hosseini, 2007: 12) such that it prepares the ground to exit from the dry and without water and grass space of desert and enter a green, lush and vibrant space (reminder of the eternal paradise).

Geometry of the space

Geometry of the space and the spatial system deals with the formation of spaces based on the relationship between architectural elements such as portal, pavilion, balcony, house symbol, surrounding walls, yards and other full and empty areas inside the walls, contrasts and the role of shady trees in the garden, and also pays attention to the relationship between each individual element and their collection with external spaces, continuity of major axes of each building with axes of the garden and proportions and relationships between indoors and semi-open spaces like porticos and open spaces in the garden (Soltanzadeh, 2008:34).

Arrangement system of buildings and building masses in the space (performance system)

In direct relationship with the garden spatial system, the performance system focuses on the whole collection and investigates the number of buildings, performance of each relationship among the performances, the role of each building in their continuity through mediator elements such as “portico, porch, and so on” and also the performance relation between them and the sequence of continuity. The performance system deals with performance of the entire garden and its constituent elements based on historical results and the type of single buildings like house portal, pavilion or bath and other small homes inside the walls (the same, 37). In addition, the performance system, identifying the type of a garden including residential garden, recreational garden and formal garden, will help with the understanding of the performances. In the context of its definition, the study of the performance system also deals with the relationship between garden with the area, region and town.

The system of movement in the space

The system of human movement in the space or described more technically as the space perception system is a system through which the space quality and quantity is suggested to the audience and operators' minds by the designer. Therefore it can be regarded as the most influential factor on the process of the space perception (Khansari, 1998:141).

The space closeness system

Persian Garden is a collection that always creates a conflict between desert nature and green nature together with circulation of water and trees. Therefore all gardens that were established in the desert were surrounded by some walls or a grid wall was used around them so that it was like a paradise in the desert (Johnsohn, 1929:251).

The system of existence and movement of water in the space

Irrigation system deals with the existence of water and its movement shape in garden. The source, aqueduct, spring and branch of river on the one hand and the role of water when a garden is probably used to irrigate surrounding streets or other gardens or farms on the other hand are investigated in the irrigation system. The match between streams and river with the main axes and also adaptation of water sags, pools, fountains and the role of existence of water, the added pleasure and coolness together with its sound in specific spaces of a garden are proposed in the system (Museum of Contemporary Art, 2004:147). In addition to insisting on its movement axes and spaces of its existence, water plays its functional role through streams

and river and irrigates plants: Water plays a specific role in the investigation of the space and architectural systems and the role is more highlighted when it comes to the architectural land layout (Heydari, 2008).

Planation system in the space

Plantation system uses planting order in the garden to be able to apart from those components, elements and spaces, look at the nature from its idea perspective while defining and designing the garden idea and coordinate it with the garden architecture. In addition, considering system-building trees which create the general form of a garden plant system and determination of their types, which is accomplished during a year with respect to climatic conditions, the garden type and its usage times, is very important. Determination of the species of these types of trees and whether they should be of the same type or a combination of several species creates the general form of a garden plantations system lies in the framework of this section (Alexander Clouston, 2007:22).

In order to achieve the goal, grouping of plants such as grouping of shady trees and their types, grouping of fruit trees in plots and grouping of plants and flowers is examined and studied in the system.

HOW TO CHOOSE THE SAMPLE CASE

On the Persian Garden sample formed in the honored Islamic period, it was attempted to choose a case that purely states stable values of Iranian architecture. Therefore Fin Garden of Kashan as one of the oldest and most entrenched Islamic period gardens will be analyzed. The garden existed for a very long time and passed enough time for evolution and emergence of transcendental ideas.

INTRODUCTION OF THE SELECTED SAMPLE CASE

Fin Garden of Kashan

Fin King Garden of Kashan is of origin of Iranian castle gardens which has been formed due to special reasons; however undoubtedly selection of such type of model enclosed by a tall wall is not irrelevant to its royal use so that in the refuge of its towers and walls, one can not only relax but also due to its size, shape and height which is boastful from the garden inside and outside, remind a royal glory. What is remained from the era of formation of the garden, coincided with the reign of Shah Abbas I (996-1039 AH) is the foundation of the garden; such that a threatened space is formed in the middle of the garden towers and walls which suggests a pure and geometrical space based on the spatial structure and discipline of Persian Garden and in a point in the middle of the garden the pavilion or the middle building is located. Geometrical structure and spatial form the garden and the comparison of all these with the skeleton of Iran's Garden reminds that the middle pavilion, which is also called Safavi gooseneck, is an important point. Here also like other Persian Gardens, axes are a part of geometrical structure of the garden which not only are formed along with geometrical design and shape of the garden which is sometimes so simple, but also they themselves form some points in the general design of the garden according to its geometrical structure and system so that they are able to lay expansion of spaces and formation of the garden architectural system based on the mentioned geometrical system (Abolghasemi, 1992:18).

One of the spaces which was surely been built in the Safavids period or casually in the reign of Shah Abbas I, is the middle pavilion of the garden which is located along the main axis of the garden and in front of the refrigerator, which itself was later developed. The location of the pavilion which is in the

upper half of the garden and lack of information about the existence of alcove or a similar space with the balcony function of garden brings to mind the point that the middle pavilion itself has also had the function of alcove and balcony of the garden (Hekmati, 2002:87).

The portal building, in spite of seeing some changes during the life of the garden especially in the Qajar era and sometimes in the reign of Fath Ali Shah and Nasser al-Din Shah, has been considered when primarily forming the King Garden in the new location and has been built (figures 1 and 2).

Extension of Fath Ali Shah era to Fin Garden are:

- Painting added to the building in Safavi gooseneck
- Building the large bathroom or the royal bath
- Building Qajar gooseneck (of Fath Ali Shah) in the Southwest of the garden
- Creation of Nezam al-Dawla's privacy (Harem) by his son-in-law Ali Mohammad Khan Nezam al-Dawla (Wiber, 1979:140).



Figure 1: Soleymanieh spring and irrigation system of Fin Garden of Kashan

ANALYSIS OF STRUCTURAL SYSTEMS EFFECTIVENESS ON SPACE CREATION OF FIN GARDEN OF KASHAN

As it was previously examined, eight main systems dominating Iranian landscape architecture can be stated as follows:

1. Establishment system
2. System of access and approach to the space

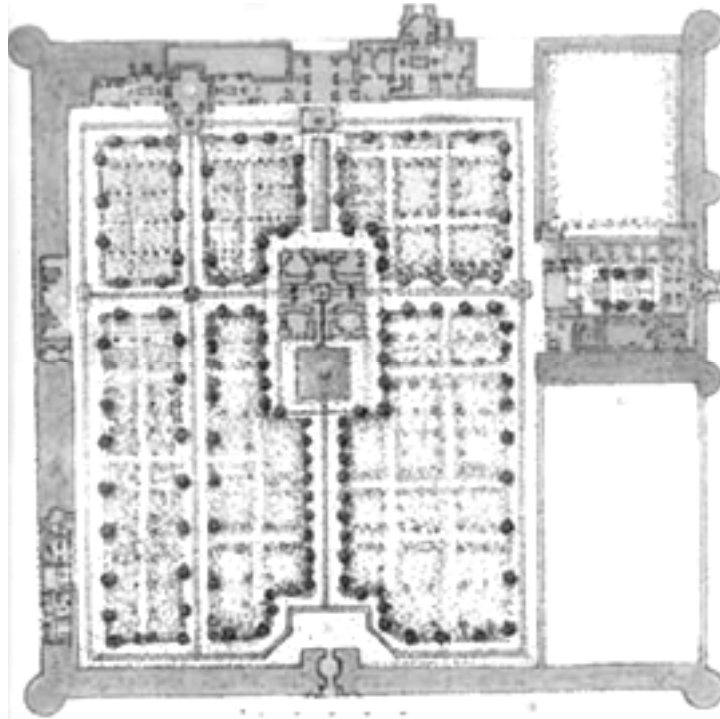


Figure 2: Plan of Fin Garden of Kashan
(reference: Naima, 2006)

3. Geometry of the space
4. Arrangement system of buildings and building masses in the space
5. The system of movement in the space
6. The space closeness
7. The system of existence and movement of water in the space
8. Plantation system in the space

Out of the above factors, items of establishment system (organization of subdivisions in the garden plan, the slope of the land and the palace location), producer and forming geometry of the space, human system movement, the system of existence of water in the space and plantation system of plant species have been examined as the favorite items to structurally analyze the sample case space insisting on religious beliefs and religious tenets of Islam.

Analysis of the effect of the establishment system

Organization of subdivisions in the garden plan: In the basic design of the garden, preservation of symmetry has had a special importance. According to the existing drawings, the primary model of the garden is divided into four sections by the main water paths and the upper section is symmetrical with the two lower sections. Organization of subdivisions in this era is closer to the famous Chaharbach pattern and its movement axes were strongly designed. There are various interpretations on dividing Persian Gardens into four sections.

The basics of using four-section geometry for Fin Garden plan is compatible with some of the interpretations of Quran paradise pattern.

Garden of Eden description in Quran

In addition to a general description, Garden of Eden has been introduced in Quran with the most accurate details. In a general description, Eden reminds us of two great parallel gardens each of which has two smaller gardens. The total number of fourfold gardens and smaller gardens is a reminder of Chaharbagh plan and its modulation in smaller gardens (figure 3).

The four rivers of paradise were described in the Holy Quran, which is the geometric foundation of Persian Garden as Chaharbagh (four streams) and its architecture and water path. In Surah Muhammad

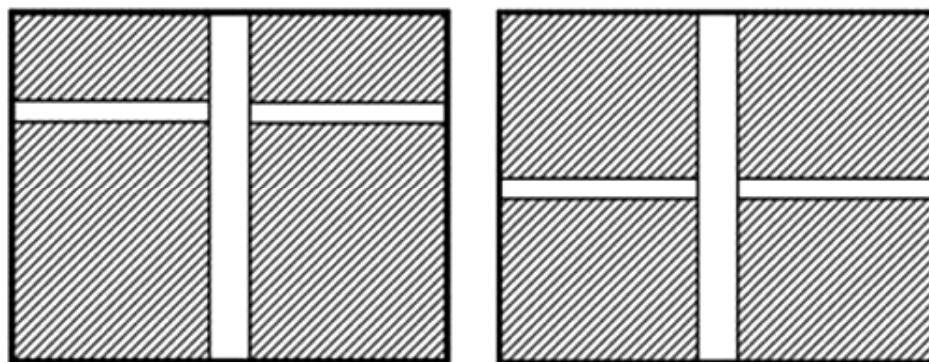


Figure 3: Right side: a hypothesis of the general form of Chaharbagh Al-Rahman Surah (verses 46 and 62); (two gardens inside two gardens) left side; general form of classification of Fin Garden of Kashan. This hypothesis is partly retractable with the general model of famous Iranian Chaharbagh (for example Fin Garden).

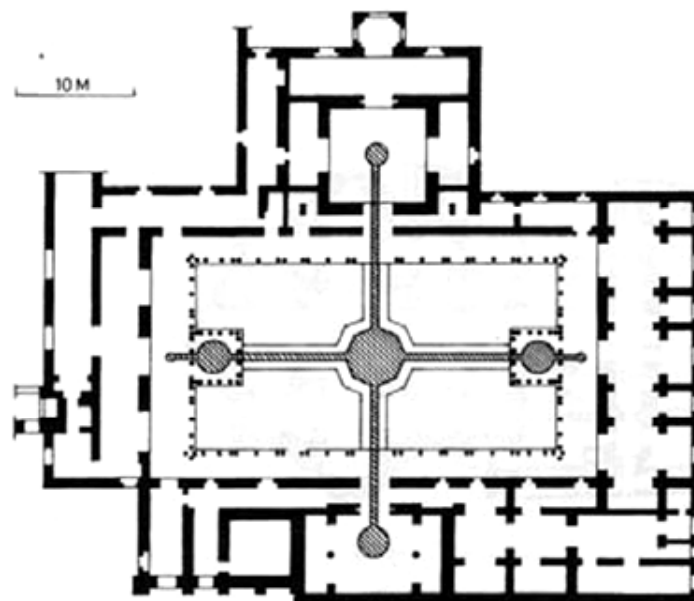


Figure 4: Four streams with boiling from the middle and flowing to four directions in Alhambra Palace, Reference: Groter, 1996.

verse 15, the four streams were mentioned with titles such as streams of clean water, milk, honey and wine and have had a special reflection in the description of famous travel writers such as Ibn Battuta of Islamic lands gardens and their heavenly ideas (1948:34-406). He cites the hadith of the Prophet (pbuh) in the interpretation of the Surah, based on which the water flow in the garden and its movement in four directions can be known as allegory of four streams of Paradise which is used in Persian Garden (Ansari and Mahmoudinejad, 2006: 44). This characteristic points to boiling of the middle and movement of the four different streams to four directions which has symbolically been emerged in some Islamic period gardens such as Spain Alhambra Palace (figure 4) (Groter, 1996: 416).

Heavenly four gardens model of the Holy Quran in Al-Rahman Surah

In Quran, Al-Rahman Surah, which is famous as Quran Bride, where the best description of Paradise has been proposed, the structure of Paradise has been introduced as four gardens with a special shape “two gardens inside the two gardens”. In the Surah, bipartite divisions has greater extent and many parts of the universe have been introduced as twofold couples whose origin refers to the twofold features of beauty and glory of God (table 1).

Table 1
Twofold divisions of Al-Rahman Surah, reference: authors

<i>Twofold items</i>	<i>Quran interpretation in Al-Rahman Surah</i>
With glory and munificence (27)	Beauty and glory of God
Oh groups of elf and human (33)	Elf and human (two main addressees of God)
Lord of the two sunrises and two sunsets (17)	Lord of the two sunrises and two sunsets (17)
The sun and the moon with definite account (5)	The sun and the moon
Plant and trees prostrate (6)	Stemmed and stemless plants
Mixed two seas (19)	Two mixed bitter and sweat seas
Two types of fruit (52)	Two types of fruit
And everybody who is afraid of the glory of god they will have two Gardens of Eden (46)	Two main Gardens of Eden
There are two gardens other than the two gardens (62)	Two subsidiary gardens of Eden

The slope of the land and location of the palace

In Fin Garden, the main pavilion is located in the upper third of the garden and the water is inclined into three sides. The water flows from the pavilion to the garden and strengthens axis making and geometry of the garden. The pavilion is located at the highest point of the land and reflects the Quran idea of there are gardens below which streams are flowing (Baqara:25) (Tabatabaei, 1984:78).

In Quran Paradise pattern, pavilions (heavenly balconies) are put on some plates (Zumar:30 and Spider:58) so that the pavilion is insisted on and heavenly people look at the garden while sitting on it. Companionship of water and pavilion can be imagined in various situations. However, according to verses, the best option can be the flow of water from lower levels of the pavilion and its movement in four directions and four rivers, an allegory of four streams of Paradise which is used in Persian Garden (figure 5).

In Fin Garden, Shah Abbas pavilion, which has divided the whole garden into four sections at the intersection of the major and minor axis, is close to the Quran pattern because water flows from there towards three directions and according to the existing sections, it is located at the highest point of the garden. The highest point was sometimes in the middle and sometimes (in case of impossibility) in the end of the garden.

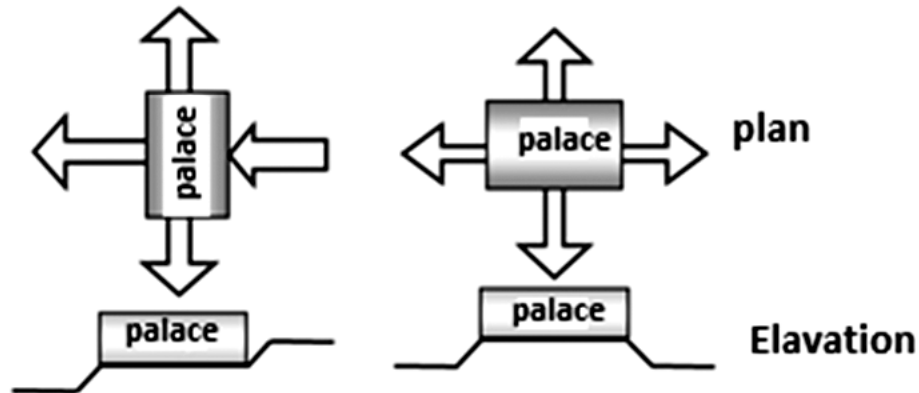


Figure 5: Comparison of pavilion and water pattern in Quran Paradise (right side) and Fin Garden (left side). Reference: authors

Analysis of the effect of the space geometry system on the space make up of Fin Garden of Kashan

Iranian landscape architecture design is based on the consideration and special application of quadrilateral and especially rectangle and square in the general composition and its components; the characteristic constitutes the distinguished personality of Persian Garden which was considered by others from the very beginning. The plotted analytical diagram for the sample case shows the importance of straight and direct

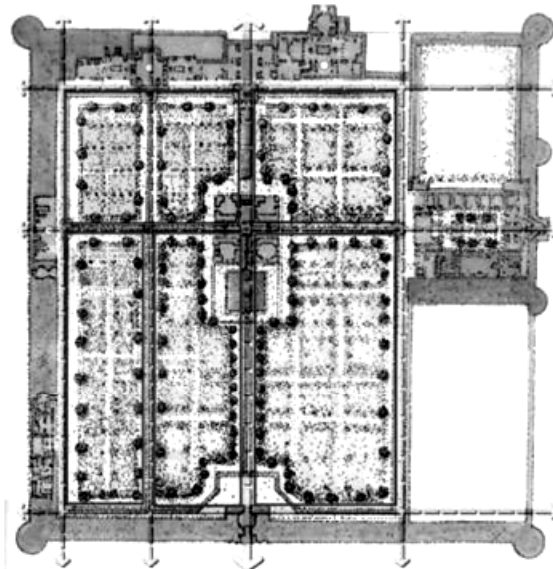


Figure 6: Analytical diagram of the space geometry system on the plan of Fin Garden of Kashan, Reference: Authors

lines and creation of four corner angles in the geometrical system of Persian Gardens' landscapes in the Islamic period (figure 6). In other words, considering the symbolic view of Islam on the geometrical system imagined from "Paradise", "heavenly manifestations" and "sacred images", the following items are always observed when designing the spatial geometry of Persian Gardens' landscapes:

1. Existence of intersecting lines of flowing water as the general system for the space geometry
2. A tendency to geometrically divide the land into four sections affected by intersecting streams
3. Tetrahedral and tetragonal (Abdollah Defa, 2006:47) (table 2)

Table 2
The effect of the space geometry system on the space make up of Fin Garden of Kashan, Reference: Authors

<i>Spatial analysis</i>	<i>Fin Garden of Kashan</i>
The space geometry	Geometrical system of the whole space Architectural geometrical system
	Two main orthogonal axes and a number of minor axes The garden sections being tetrahedral and rectangular is evident in the space geometrical system
	Components systematizing the space geometry
	Four rectangular pieces separated by main axes

Analysis of the effect of the movement system on the space make up of Fin Garden of Kashan

The system of human movement in the space or described more technically as the space perception system is a system through which the space quality and quantity is suggested to the audience and operators' minds by the designer. Therefore it can be regarded as the most influential factor on the process of the space perception (figure 7). In other words, considering the symbolic view of Islam on the movement system imagined from "Paradise", the following items are always observed when designing the movement space of Persian Gardens' landscapes:

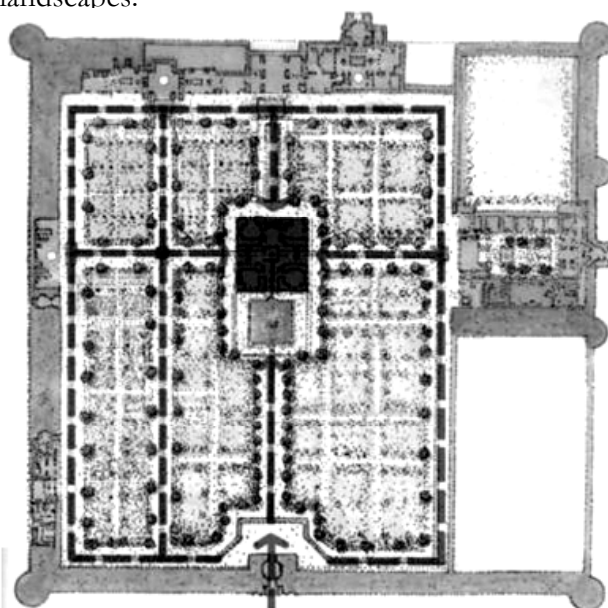


Figure 7: Analytical diagram of the system of movement in the space on the plan of Fin Garden of Kashan, Reference: Authors

1. A space with a perspective breadth of view
2. A space with a variety of spatial quality and perspective diversity
3. A space with encouragement of audience to show up and walk on it
4. Safe and calm privacy (table 3)

Table 3
The effect of the movement system on the space make up of Fin Garden of Kashan, Reference: Authors

<i>Fin Garden of Kashan</i>	
System of movement in the space	Plurality and diversity of movement axes to reach and achieve the central space has led to the creation of numerous vision perspectives.

Analysis of the effect of the system of existence of water and plant on the space make up of Fin Garden of Kashan

In addition to insisting on the movement axes of the spaces, water proceeds to its functional role and irrigates plants through streams and rivers. In addition to preparing the ground for various plantations in the space, water give a desirable quality to the environment by its flowing sound and the resulting humidity.

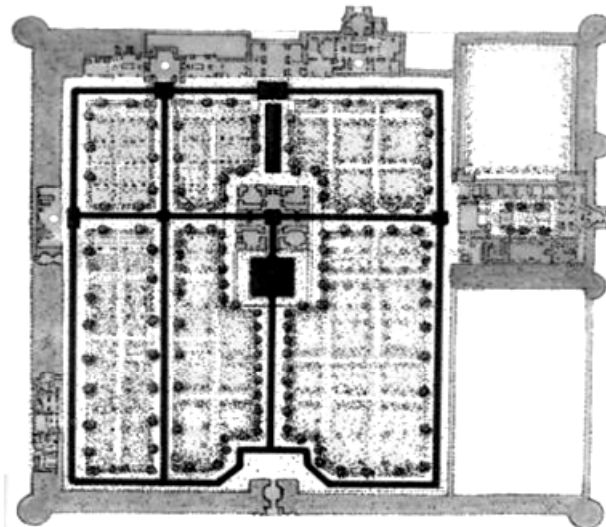


Figure 8: Analytical diagram of the system of existence of water and plant in the space, the plan of Fin Garden of Kashan, Reference: Authors

Table 4
Analytical diagram of the system of existence of water and plant in the space, the plan of Fin Garden of Kashan, Reference: Authors

<i>Fin Garden of Kashan</i>	
System of existence of water in the space	Establishment on the main perception axis of the space, insisting on the geometrical system of the space, insisting on the spatial centrality
System of planation in the space	Insisting on the access axes perspective with the help of strong and tall trees, a space full of vegetation

Vegetation has also a special position in the studied subject from the perspective of adornment and qualitative enhancement of the environment and also improvement of climatic conditions in the artificial environment (figure 8). Table 4 shows the analytical diagram of the system of existence of water and plant in the space of Fin Garden of Kashan.

Symbolism of water movement in Fin Garden of Kashan according to Quran Paradise

Since there are considerable proximities between Quran's description of Paradise and Fin Garden, the garden shape root can be searched in the pattern of the two stated examples in Quran. Water presents in Fin Garden as waterfall, boiling water, flowing water and in the middle pool. Water paths existing in the garden axes are not so wide. These rivers circulate all rounds the garden. Water appears here in a point where it can be able to irrigate all the garden and therefore obeys the situation of land slope. The middle pool has been devised to complete the garden irrigation system and also create the garden geometrical discipline. In addition to the functional and life-giving role in plants irrigation, water plays a sensible role in land adornment and pleasure of the garden and creation of desirable sounds (Mir Findiriski, 2001: 7). The element of water shows up in the Paradise structure in four ways:

1. Presence of water in heavenly streams (Baqara: 25)
2. Presence of water in heavenly pools (Baqara: 60)
3. Presence of water in heavenly pools (Kowsar:1) (Ansari, Mahmoudinejad, 2006:44).

CONCLUSION

Landscape theorists usually regard garden as the symbol of idealistic life pattern in any culture. In spiritual cultures that look at Paradise as their idealistic pattern, garden is the reflection of Paradise and therefore in religious cultures consideration of important and large gardens originates from various perspectives of any era's people's thought and beliefs on the ideal life in Paradise based on religious beliefs. In this paper, the structural and shape systems of Iranian landscape architecture was first studied. Then, the effect of the systems on the space make up of Fin Garden of Kashan was analyzed. In fact, religious tenets of Islam has been effective on the formation of the conceptual and formal structure of Fin Garden of Kashan. Hence, the main objective of the study was to respond to the skeletal interpreter and analysis of the formal system dominating the architecture of Fin Garden insisting on religious beliefs and tenets of Islam. In this study, the constituent components of landscape architecture such as the establishment system, system of access and approach to the space, arrangement system of buildings and building masses in the space, the system of movement in the space (internal access), the space closeness, the system of plantation in the space and the system of existence and movement of water in Fin Garden was studied it was attempted to explain the eminent role of religious beliefs in the formation of garden as a design of the ideal Paradise by rooting its constituent ideas. Investigations demonstrate that the skeleton of Fin Garden has been influenced by the religious foundations and tenets of Islam.

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